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AN UNMANNED MOTION-SENSITIVE AUTOMATIC INFRARED CAMERA TESTED IN A PACIFIC NORTHWEST QUEST FOR POSSIBLE LARGE PRIMATES

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INTRODUCTION

While probably best known for its interest in the unidentified aquatic life in Loch Ness, Scotland (Robert H. Rines, 1982, Summarizing a Decade of Underwater Studies at Loch Ness, *Cryptozoology,* Vol. 1: 24–32; Robert H. Rines, Harold E. Edgerton and Robert Needleman, 1984, Activities of the Academy of Applied Science Related to Investigations at Loch Ness, 1984, *Cryptozoology,* Vol. 3: 71–73; Harold E. Edgerton, Charles Wyckoff, Robert H. Rines, Robert Needleman and Justice C. Rines, 1989, AAS Underwater Elapsed Time Camera Silhouette Photography Experiments at Loch Ness, 1989, *Cryptozoology,* Vol. 8: 58–63), the Academy of Applied Science has, since the mid-1970's, also collaborated with Peter C. Byrne, of Mount Hood, Oregon, in his investigations of Sasquatch (Bigfoot) in the Pacific Northwest (Peter Byrne, 1975, *The Search for Bigfoot: Monster, Myth or Man?,* Acropolis Books, Washington, D.C.). More recently, the Academy has again assisted, in 1991, in modifying and applying triggerable, automatic camera innovations developed for its Loch Ness research to the problems of the surreptitious, unmanned monitoring of forest and other areas where such reported large, unknown primates may frequent, as discussed also by other interested parties (James A. Hewkin, 1991. Sasquatch Investigations in the Pacific Northwest, 1991, *Cryptozoology,* Vol. 10: 76–78).

Such automatic movement-triggering cameras (and video versions) have other applications apart from these interests in the Pacific Northwest, including the Academy's recent cooperative effort with Peter Byrne in elephant tracking in Nepal (Peter Byrne, 1990, *Tula Hatti: The Last Great Elephant,* Faber and Faber, Boston and London).

Following development of the unmanned, automatic, motion-sensing 35mm camera, and laboratory testing by Charles Wyckoff and Duane Marshall in Needham, Massachusetts, the cameras were put to their first field use in the snow-ladened forests of Oregon, under Byrne's direction, during the period March 10–16, 1991. The team consisted of Robert H. Rines, Carol M. Rines, Justice C. Rines, and Patrick Brogan.

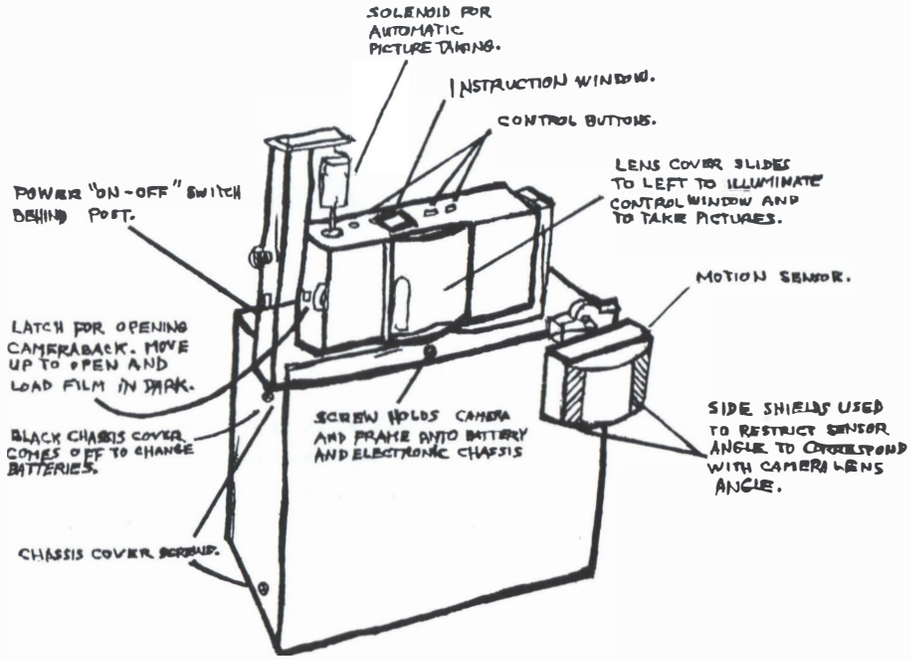
SOLENOID FOR AUTOMATIC PICTURE TAKING.
INSTRUCTION WINDOW.
CONTROL BUTTONS.
LENS COVER SLIDES TO LEFT TO ILLUMINATE CONTROL WINDOW AND TO TAKE PICTURES.
POWER "ON-OFF" SWITCH BEHIND POST.
MOTION SENSOR.
LATCH FOR OPENING CAMERABACK. MOVE UP TO OPEN AND LOAD FILM IN DARK.
SCREW HOLDS CAMERA AND FRAME INTO BATTERY AND ELECTRONIC CHASSIS
SIDE SHIELDS USED TO RESTRICT SENSOR ANGLE TO CORRESPOND WITH CAMERA LENS ANGLE.
BLACK CHASSIS COVER COMES OFF TO CHANGE BATTERIES.
CHASSIS COVER SCREWS.

FIG. 1.—Isometric view of motion-sensitive, infrared camera viewed from the front. Batteries and circuitry are inside box. Motion detector has side shields (black tape) to restrict the detection angle to correspond to lens angle. Lens cover must be slid to left to operate camera. Solenoid is weather-protected with plastic. The camera is a 35mm Olympus Infinity Twin.

NARRATIVE DESCRIPTION

The objective of the March, 1991, fieldwork, later carried into the fall and early 1992, was to position the cameras in areas where suspicious tracks in mud and snow had been recently observed and reported. The camera was designed to be unmanned and undetectable to intruders, but to be automatically triggered by their movement into the camera vicinity. In addition to motion detection, the camera was to have the capability of multiple, unobservable infrared flashes while taking a series of successive corresponding photographs, and then periodically checking before continuing with additional series of successive exposures; this would ensure the continued presence of the intruder, thus avoiding dissipating all the film even though the intruder may have left the vicinity.

A further practical requirement for the replicative construction by researchers was the use of readily available cameras and components, and at relatively low cost. We selected the Olympus Infinity Twin as the basic 35mm camera because of its capability, in automatic mode, of taking three suc-

A B C

FIG. 2.—Calibration photos taken by motion-sensitive, infrared camera. A. Scene of possible intrusion. B. Pseudo-intruders Justice Rines and Patrick Brogan during automatic activation of camera. C. Same.

cessive pictures (about 1 second apart) with automatic flash, and film advancement upon a single depression of the trigger button, and then stopping.

For a motion detector, we used a conventional Sears home outdoor floodlight infrared motion detector, the circuit of which was modified so that the detector output, instead of causing the switching on of a floodlight, as intended, was signal-processed to trigger a solenoid, the armature of which was rigidly mounted by a vertical arm at the top trigger button side of the camera, directly on top of the button (Fig. 1).

Thus, upon the motion detector indicating an intrusion in front of the camera by its infrared (invisible) sensing, the camera trigger button would be depressed by the actuation of the solenoid armature, putting into operation the automatic successive three-picture exposures of the camera. Since the usual camera flash lamp has a substantial infrared light content, the covering of the flash lamp window with a strip of infrared filter made the flashing operation invisible; only the three "clicks" of the automatic picture-taking gave any clue to the camera's presence, and this was imperceptible, at least to humans, beyond a few feet in front of the camera.

The circuit was designed to de-energize the solenoid after 3 seconds (i.e., at the end of the automatic three-picture series). If, at such time, there was no further movement in front of the camera, there would be no further operation of the system; but if further movement occurred, the cycle would be repeated for three more shots; and so on.

RESULTS

The first experiments in the snow-covered forests of the Hood River region were conducted overnight at remote sites selected by Peter Byrne from his earlier fieldwork.

With the sensitivity of the motion detector adjusted to discriminate movement of leaves in the trees from larger moving bodies in front of the camera, calibration was accomplished by using human pseudo-intruders. Figs. 2A, 2B, and 2C are calibration photos taken by the camera at successive one-second intervals, using infrared film, at one of the forest sites. Fig. 2A shows the scene of possible intrusion, and Figs. 2B and 2C the triggering by pseudo-intruders Justice Rines and Patrick Brogan as they were automatically "caught" in traversing the area.

No cryptic intruding objects were photographed overnight in the initial field tests, or in the ensuing months.

FUTURE PLANS

While the kind of cryptic intruders hoped for did not appear despite interesting tracks in the snow, these cameras are now part of the continuing research project inventory.

13th Annual Membership Meeting

International Society of Cryptozoology

Saturday, June 11, 1994

Hosted by:

Department of Biological Sciences

Illinois State University

Normal, Illinois, U.S.A.

Speakers: Tim M. Berra (20th century fish discoveries); Aaron M. Bauer (20th century amphibian/reptile discoveries); Angelo P. Capparella (20th century bird discoveries); J. Richard Greenwell (20th century mammal discoveries); Terry J. Cullen (a possible new Venezuelan caiman—with live 6-foot specimen); Tim M. Berra (recovery of Megamouth III); Jay W. Tischendorf (the Eastern and Yellowstone pumas); Roy P. Mackal (an unknown New Guinea lake animal).

The meeting will be held in Lecture Room 133 of Felmley Hall. For further details call the meeting organizers: Angelo P. Capparella at (309) 438-5124/452-0450; J. Richard Greenwell at (602) 884-8369.

Social Hour (for ISC members and their guests only): 9-10 a.m.
The rest of the meting is free and open to all.